

PROCESS CONTROL SYSTEM USING A LAYERED-HIERARCHY CONTROL STRATEGY DISTRIBUTED INTO MULTIPLE CONTROL DEVICES

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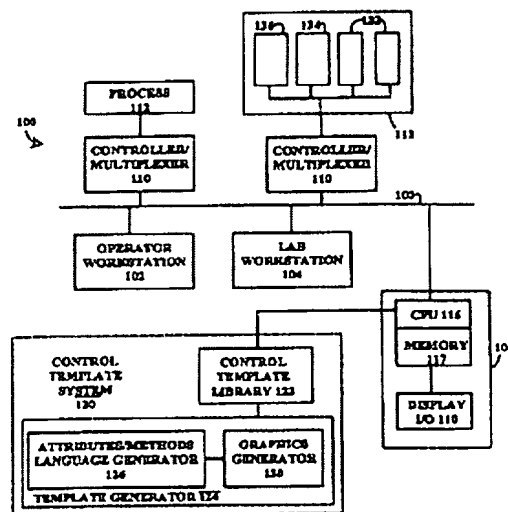
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A process controller (100) implements smart field device standards (132) and other bus-based architecture standards so that communications and control among devices are performed and the standard control operations are transparent to a user. The process controller implements and executes a standard set of function blocks (522) or control functions defined by a standard protocol so that standard-type control is achieved with respect to non-standard-type devices (12). The process controller enables standard devices (6) to implement the standard set of function blocks and control functions. The process controller implements an overall strategy as if all connected devices are standard devices by usage of a Fieldbus function block as a fundamental building block for control structures. Function blocks are defined to create control structures for all types of devices. A user defines the control strategy by building a plurality of function blocks and control modules (440) and downloading or installing user-specified portions of the control strategy into the Fieldbus devices and the non-Fieldbus devices. Thereafter, the Fieldbus devices automatically perform the downloaded portions of the overall strategy independently of other portions of the control strategy. The process control system includes a diagnostic monitoring and display functionality for viewing, in a coherent manner, diagnostic information relating to a process that operates over multiple devices and system components. The digital control system automatically senses when a new controller is attached to a network and determines the number and types of I/O Ports that are attached to the new controller. The



digital control system program also includes an automatic configuration program that responds to sensing of a new controller by automatically configuring the input/output (I/O) subsystem. Upon connection of the device, the device is automatically sensed and configured using the database configuration information, without setting of physical switches or node address information on the devices. The digital control system with a predetermined configuration automatically senses the connection to a network of a digital device that is not included in the predetermined configuration. The process control system includes a user interface (300) which supports multiple IEC-1131 standard control languages and user-selection from among the control languages. From a single application routing, a user selects a control language from among a plurality of control languages including, for example, Function Blocks, Sequential Function Charts, Ladder Logic and Structural Text, to implement a control strategy. The process control system includes an alarm and event monitoring and display system for which various users of the system can easily prioritize the alarm and event information that is displayed.

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